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~~STANCHION WITH SLEEVE AND METHOD OF USING SAME~~

Reference to Related Applications

*Sub A3*  
5 This application is a continuation-in-part of U.S. design patent application Serial No. 29/054,342, filed May 30, 1996, which is a divisional of U.S. design patent application Serial No. 29/019,652, filed March 7, 1994, now U.S. Patent No. D374,941,

10 which is a continuation-in-part of U.S. patent application Serial No. 08/038,676, filed March 26, 1993, now U.S. Patent No. 5,323,583.

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Background of the Invention

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15 The present invention generally relates to guard rails, and more particularly relates to a protective stanchion or post.

Guard rail systems, including individual stanchions or posts, are commonly found in industrial settings where, for example, protection of a building structure or fixed equipment, from vehicular traffic and the like is desired. Further, guard posts or protective stanchions are commonly found in public parking lots and the like to preserve a drive-up telephone booth, for example, or otherwise provide a protective function.

20 Commonly known guard posts and protective stanchions often comprise a steel post set in the ground or pavement with a portion of the post projecting a desired amount above the pavement surface, commonly on the order of about four feet or so. To enhance the durability of such a steel pipe stanchion, one may fill the steel pipe with concrete. This both closes the interior of the pipe to environmental deterioration and enhances the

structural integrity and impact absorbing qualities of the stanchion. Further, such stanchions are typically painted to preserve the exterior of the stanchion and resist deterioration by rusting or the like. Protective stanchions are also painted to provide a high visibility color for the stanchion.

5 However, such prior known steps to enhance the durability of a protective stanchion, including painting, are typically labor-intensive and require repetitive maintenance to repair chipped paint, worn surfaces, or discoloration over time. Thus, one will readily recognize a present need for a protective stanchion with a durable exterior to minimize repetitive maintenance requirements.

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Summary of the Invention

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*Sub A5* → The above addressed failings of present protective stanchions and the identified need for a low maintenance protective stanchion are addressed by the present invention which provides a clever assembly of a stanchion post and protective sleeve. The post is an elongated member having one end secured to a fixed structure. The post extends generally linearly away from the one end, at the fixed structure, to an opposing terminal end. A sleeve is provided, having an elongated body extending generally curvilinearly between two opposing ends. The sleeve has an interior cavity extending along the sleeve and through at least one of the two opposing ends. Further, the interior cavity has a cross-sectional shape adapted for slip fit engagement with the post. The post is inserted 20 into the interior cavity and the sleeve force fit over the post.

These and other features, objects, and benefits of the invention will be recognized by those skilled in the art, from the specification, the claims which follow, and the attached drawings.

Brief Description of the Drawings

5 FIGURE 1 is a side elevational view of a sleeve for a protective stanchion according to the invention;

FIGURE 2 is a side elevational view of a protective stanchion according to the invention in a partially assembled state;

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~~FIGURE 3 is an enlarged view of detail III of Figure 2;~~

~~FIGURE 4 is an enlarged view of detail III of Figure 3;~~

~~FIGURE 5 is the view of Figure 2 with the stanchion fully assembled;~~

~~FIGURE 6 is a cross-sectional view taken along line VI--VI of Figure 5;~~

FIGURE 7 is a side elevational view of a second embodiment of a protective stanchion according to the invention;

15 FIGURE 8 is a side elevational view of a third embodiment of a protective stanchion according to the invention;

FIGURE 9 is a side elevational view of a fourth embodiment of a protective stanchion according to the invention;

FIGURE 10A is a side elevational view of a sleeve having a more pointed top  
20 according to a different embodiment of the invention; and

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~~FIGURE 10B is a side elevational view of a sleeve having a plurality of side facets according to a yet a further embodiment of the invention.~~

Description of the Preferred Invention

A preferred embodiment of a protective stanchion according to the invention is  
5 generally shown in the figures and indicated by the reference numeral 10. Stanchion 10  
comprises an elongated member of post 12 and a sleeve 14.

As shown in Figures 2 and 5, post 12 is secured at a first end 16 to a fixed  
structure 18, and extends generally linearly away from fixed structure 18 to an opposing  
terminal end 20. Post 12 will extend about four feet from first end 16 to terminal end 20,  
10 but this distance may vary and be adapted according to the requirements of the particular  
installation.

Post 12 may be any suitable elongated structural member, and is most preferably a  
length of structural steel pipe, ranging in size from about three inches to about eight  
inches in diameter and having a wall thickness commonly designated by "standard  
15 strength" or schedule 40 (SCH 40) pipe, "extra strong", or "double extra strong" as is  
known in the trade. The requirements of the specific installation will dictate the size and  
strength of post 12, which may range beyond the above examples. Further, post 12 may  
include structural members other than steel pipe, which typically has a circular cross-  
sectional shape, and may also include, but not be limited to, members having other  
20 geometric or irregular cross-sectional shapes.

First end 16 extends into fixed structure 18, and preferably extends about three feet into fixed structure 18 (Figures 2 and 5). Again, depending upon the specific installation, the length which first end 16 extends into fixed structure 18 may also be varied. If fixed structure 18 is the ground, for example, the length of first end 16 may be 5 dictated by local frost conditions, which may require that first end 16 extend about four to five feet into fixed structure 18 to avoid winter frost heaving and displacement of stanchion 10.

While Figures 2 and 5 may give the impression that stanchion 10 extends only generally vertically upwardly from a generally horizontal surface of fixed structure 18, 10 stanchion 10 is not constrained to a particular spatial origin or origin relative to fixed structure 18. Rather, stanchion 10 may be oriented in any manner according to the requirements of the specific installation.

Sleeve 14 has an elongated body 22 extending generally curvilinearly between two opposing ends 24 and 26 (Figure 1). An interior cavity 28 extends along sleeve 14 15 and through at least one of the two opposing ends 24 and 26. Most preferably, cavity 28 extends through only one end 24 and the opposing end 26 is closed to provide protection for post 12. Cavity 28 has a cooperating cross-sectional shape adapted to receive post 12 in slip fit engagement with a clearance "T," as shown in Figures 3 and 4.

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20 Sleeve 14 may be formed of a number of suitable, malleable structural materials, and is preferably formed of a structural plastic, including, for example, generally available low density polyethylenes and LEXAN.TM. brand polycarbonate, available from General Electric Company. Sleeve 14 is conveniently molded by well-known

rotary molding processes. As is also known in the molding of plastics, various coloring agents may be mixed into the material of which sleeve 14 is formed to provide a durable coloring throughout sleeve 14, and a variety of material enhancing additives may be used, including, but not limited to, additives to resist ultraviolet (UV) deterioration, for example.

As commented above, sleeve 14 extends curvilinearly between opposing ends 24 and 26, and more specifically, sleeve 14 extends along a curve 30 (Figures 1 and 2).

Curve 30 is spaced at least about one-half inch to about eight inches away from a tangent line 32 at a distance of about four feet from the intersection of tangent line 32 with curve

30, as shown at "S" in Figure 1. The curvature of sleeve 14 may be specifically formed into the sleeve during molding. The curvature of sleeve 14 may also be formed by molding sleeve 14 as a straight cylindrical member, removing sleeve 14 from a fabrication mold while still hot, and supporting sleeve 14 on a cooling rack, near the ends 24 and 26, to allow the sleeve to sag and, thus, acquire the curvature.

Stanchion 10 is assembled by inserting terminal end 20 of post 12 through end 24 of sleeve 14 and into cavity 28 (Figure 2). Because cavity 28 has a cooperating cross-sectional shape adapted to receive post 12 in slip fit engagement, as discussed above, terminal end 20 and post 12, generally, are readily received in cavity 28, and sleeve 14 is initially slipped over post 12 with relative ease. However, as sleeve 14 slides over post 12 toward first end 16, the curvature of sleeve 14 causes binding between the sleeve and post 12. As shown in Figures 2-4, the curvature of sleeve 14 will bias post 12 against one side of cavity 28 at end 24, bias terminal end 20 against the same side of cavity 28 near end

26, and bias a mid-portion 34 of post 12 against an opposing side of cavity 28. Thus, as sleeve 14 slides over post 12, binding between curvilinear sleeve 14 and linear post 12 generates a resistance so that sleeve 14 must ultimately be force fit into its final position on post 12 and sleeve 14 is, thus, securely mounted on post 12 and resists subsequent 5 removal (Figure 5).

In a second embodiment 10' of stanchion 10, as shown in Figure 7, post 12' is provided with a resilient portion 40 near first end 16' so that terminal end 20' may deflect generally arcuately about first end 16' from an original position to a deflected position, when a generally lateral force "F" is applied to post 12', between first end 16' and 10 terminal end 20', as may occur when stanchion 10' is struck by a vehicle, for example. Resilient portion 40 may be a helical coil spring, a leaf spring mount, or a resilient rubber-like insert, and the like which biases terminal end 20' toward its original position so that when force F is removed, terminal end 20' returns from the deflected position to 15 its original position. Including resilient portion 40 in stanchion 10' minimizes damage caused to stanchion 10' and to a striking vehicle or the like without compromising the boundary defining function of stanchion 10'.

A third embodiment 10" of stanchion 10 is shown in Figure 8. According to this embodiment, stanchion 10" has a flange 42 at first end 16" for bolting stanchion 10" to fixed structure 18. A fourth embodiment 10"" of stanchion 10 is shown in Figure 9, and 20 combines the resilient portion 40 and flange 42 features of stanchions 10' and 10".

Figure 10A is a side elevational view of a sleeve 50 having a more pointed top according to a different embodiment of the invention. In addition to a decorative effect,

the top, which may come to a point 52 or rounded end 54 may be useful in keeping birds from coming to rest thereon, particularly in a marine post covering application.

Figure 10B is a side elevational view of a sleeve having a plurality of side facets according to a yet a further embodiment of the invention. Again, the top may be pointed, 5 shown with numerical reference 74, or curved, depending upon the appearance desired. In addition, although only a few facets are shown in the figure, many more may be used, and may also be fluted.

*15 83* It will be understood by one skilled in the art that various modifications and improvements may be made without departing from the spirit of the disclosed concept.

10 For example, fluorescent or phosphorescent materials may be added to the sleeve in any one of the various embodiments described herein to provide a glow-in-the-dark capability. The scope of protection afforded is to be determined by the following claims and by the breadth of interpretation allowed by law.